UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,543	01/23/2004	Kenji Ikeda	Q79514	2576

23373 7590 02/16/2006

SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
SHOSHO, CALLIE E	

ART UNIT	PAPER NUMBER
1714	

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/762,543	IKEDA ET AL.	
	Examiner	Art Unit	
	Callie E. Shosho	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-9 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 1/23/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

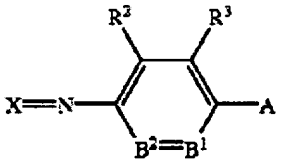
1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1, 3, and 5 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 7 of U.S. Patent No. 6,713,528 (Yamanouchi et al.). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following explanation.

Yamanouchi et al. disclose ink comprising color fine particle, i.e. less than 100 nm, dispersion containing oil-soluble dye, nonionic oil-soluble polymer, and hydrophobic high boiling point solvent. It is disclosed that the color fine particles possess average particle size of 1-80 nm. The hydrophobic dye includes dye of the formula:



wherein X is residual group of color coupler, A is $-NR^4R^5$ or hydroxy group, R^4 and R^5 are each hydrogen, aliphatic group, aromatic group, or heterocyclic group, B^1 is $=C(R^6)$ or =N-, B^2 is $-C(R^7)=$ or –N=, and R^2, R^3, R^6, and R^7 are each hydrogen, halogen, aliphatic group, aromatic group, etc.

The difference between Yamanouchi et al. and the present claimed invention is (a) present claims require hydrophobic polymer having glass transition temperature (Tg) of 40 ^{0}C or more while Yamanouchi et al. disclose non-ionic oil-soluble polymer with no disclosure of the glass transition temperature and (b) solubility of water in the high boiling point solvent.

With respect to difference (a), applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438,164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to col.5, lines 5 and 18-19 of Yamanouchi et al. which disclose the use of non-ionic oil-soluble polymer that is hydrophobic polymer such as polyethyl methacrylate which is well known to possess glass transition temperature of 65 C. It is within the skill level of one of ordinary skill in the art to choose polymer with specific glass transition temperature based on the desired properties of the ink, i.e. film-forming properties, flexibility, hardness, etc.

In light of the above, it therefore would have been obvious to one of ordinary skill that the non-ionic oil-soluble polymer of Yamanouchi et al. does include hydrophobic polymer with glass transition temperature greater than 40 C and to use such polymer in Yamanouchi et al. in order to produce ink with desired properties, and thus, one of ordinary skill in the art would have arrived at the present invention from the copending one.

With respect to difference (b), applicants' attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be

examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438,164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to col.27, lines 5-10 of Yamanouchi et al. which disclose that the high boiling point organic solvent possess solubility in water of 3% or less. Thus, it is clear that the hydrophobic high boiling point solvent of Yamanouchi et al. does in fact possess solubility in water of 3% or less, and thus, one of ordinary skill in the art would have arrived at the present invention form the copending one.

3. Claims 1, 3, and 5 are directed to an invention not patentably distinct from claims 1 and 7 of commonly assigned Yamanouchi et al. Specifically, although the copending claims are not identical they are not patentably distinct for the reasons set forth in paragraph 2 above.

4. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302). Commonly assigned U.S. 6,713,528, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

5. Claims 1, 3, and 5 are rejected under 35 U.S.C. 103(a) as being obvious over Yamanouchi et al. (U.S. 6,713,528).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

For an explanation of the rejection, see paragraph 2 above.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claim 5 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for dye of the formula A-N=N-B wherein A is heterocyclic group including 5-pyrazolone, pyrazole, oxazolone, isooxazolone, etc. and B is heterocyclic group including pyridine, pyrazine, pyramidine, pyradazine, etc., does not reasonably provide enablement for dye wherein A and B are any type of heterocyclic group. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with this claim.

Case law holds that applicant's specification must be "commensurately enabling [regarding the scope of the claims]" *Ex Parte Kung*, 17 USPQ2d 1545, 1547 (Bd. Pat. App. Inter. 1990). Otherwise **undue experimentation** would be involved in determining how to practice and use applicant's invention. The test for undue experimentation as to whether or not all compounds within the scope of claim 5 can be used as claimed and whether claim 5 meets the test is stated in *Ex parte Forman*, 230 USPQ 546, 547 (Bd. Pat. App. Inter. 1986) and *In re Wands*, 8 USPQ2d 1400, 1404 (Fed.Cir. 1988). Upon applying this test to claim 5, it is believed that undue experimentation **would** be required because:

(a) *The quantity of experimentation necessary* is **great** since claim 5 reads on dye comprising any type of A heterocyclic group such as piperidone, imidazolidone, pyrone,

thiazole, furan, etc. and any type of B heterocyclic group such as piperidone, imidazolidone, pyrone, pyrazolone, etc

(b) There is **no** *direction or guidance presented* for making an ink comprising dye comprising any type of A heterocyclic group such as piperidone, imidazolidone, pyrone, thiazole, furan, etc. and any type of B heterocyclic group such as piperidone, imidazolidone, pyrone, pyrazolone, etc

(c) There is an ***absence** of working examples* concerning making ink comprising dye comprising any type of A heterocyclic group such as piperidone, imidazolidone, pyrone, thiazole, furan, etc. and any type of B heterocyclic group such as piperidone, imidazolidone, pyrone, pyrazolone, etc

In light of the above factors, it is seen that undue experimentation would be necessary to make and use the invention of claim 5.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claims 1, 3, and 6 each recite "high" boiling point solvent. The scope of the claims is confusing because it is not clear what is meant by "high" or what boiling points this encompasses.

(b) Claims 1, 6, and 8-9 each recite color "fine" particle dispersion. The scope of the claims is confusing because it is not clear what is meant by "fine" or what size of particles this phrase encompasses.

(c) Claim 5 discloses dye of formula I which contains substituent Y and dye of formula II which contains substituent X. The scope of the claim is confusing because there is no disclosure of what either Y or X represent. Clarification is requested.

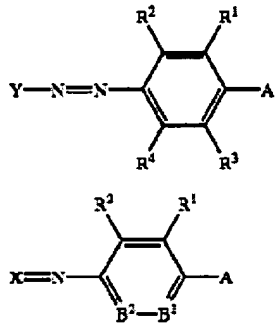
Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

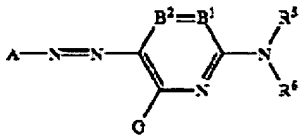
> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-9 are rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi et al. (U.S. 2003/0232902) taken in view of the evidence given in Satake et al. (U.S. 5,814,685).

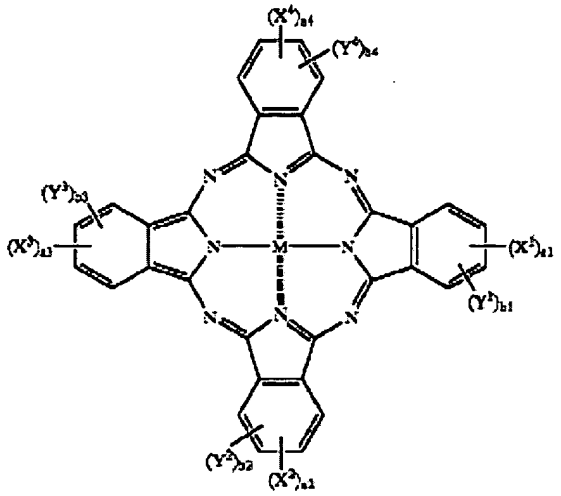
Takahashi et al. disclose ink comprising color fine particle dispersion containing hydrophobic dye, hydrophobic polymer, and organic solvent with high boiling point and water solubility of 4 g or below. The color fine particles possess average particle size of 0.01-0.5 μm and specific gravity of 0.9-1.2. It is disclosed that the hydrophobic dye includes those of the formula:



where R^1-R^4 is hydrogen, halogen, aliphatic group, aromatic group, etc., A is $-NR^5R^6$ or hydroxyl group, R^5 and R^6 are each hydrogen, aliphatic group, aromatic group, or heterocyclic group, B^1 is $=C(R^3)-$ or $=N-$, B^2 is $-C(R^4)=$ or $-N=$, Y is unsaturated heterocyclic group, and X is residue of color coupler, and



where A is residue of 5-membered heterocyclic diazo component A-NH_2, B^1 is $=CR^1-$, B^2 is $-CR^2=$, R^5 and R^6 are each hydrogen, aliphatic group, aromatic group, etc., and G, R^1, and R^2 are each hydrogen, halogen, aliphatic group, aromatic group, cyano group, etc.,



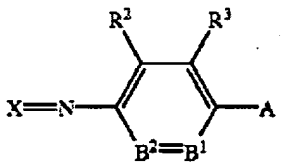
where X^1-X^4 are each –SO-Z^1, SO_2Z^1, or $SO_2NR^{21}R^{22}$, Z^1 is alkyl group, cycloalkyl group, alkenyl group, etc., and R^{21} and R^{22} are each hydrogen, alkyl group, cycloalkyl group, etc. The hydrophobic polymer includes polyethyl methacrylate and polystyrene, which are well known, as evidenced by Satake et al. (col.4, lines 51-52 and col.5, line 50), to possess glass transition temperature of 65 ^{0}C and 100 ^{0}C, respectively. Further, given that polyethyl methacrylate and polystyrene are identical to polymer utilized in the present invention, it is clear that the polymers would inherently possess equilibrium moisture content at 25 ^{0}C under a relative humidity of 60% RH of 3% or less as presently claimed. There is also disclosed ink jet recording method wherein the ink is printed onto image receiving material having at least one porous layer containing thermoplastic hydrophobic polymer particles which are larger than the mean particle size of the color fine particles. It is disclosed that the ratio of the mean particle size of the thermoplastic hydrophobic particles (d_2) to the mean particle size of the color fine particles (d_1) is $2 < d_2/d_1 < 100$. It is further disclosed that the thermoplastic hydrophobic polymer particles and the hydrophobic polymer contained in the color fine particles have at least one monomer in

common. It is also disclosed that the ink is fused onto substrate using heat and pressure (paragraphs 22-23, 30-32, 45-51, 167-172, 297, 303-305, 357-358, 360, 385, 395, 431-432, 442, 447-448, 477-478, 480, and 558).

In light of the above, it is clear that Takahashi et al. anticipate the present claims.

12. Claims 1-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamanouchi et al. (U.S. 6,713,528) taken in view of the evidence given in Satake et al. (U.S. 5,814,685).

Yamanouchi et al. disclose ink jet ink comprising color fine particle dispersion containing oil-soluble dye, hydrophobic high boiling point solvent having solubility in water of 3% or less, and nonionic oil-soluble polymer, i.e. hydrophobic polymer. It is disclosed that the color fine particles possess average particle size of 1-80 nm. The hydrophobic dye includes dye of the formula:



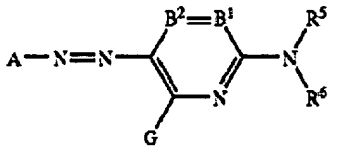
wherein X is residual group of color coupler, A is $-NR^4R^5$ or hydroxy group, R^4 and R^5 are each hydrogen, aliphatic group, aromatic group, or heterocyclic group, B^1 is $=C(R^6)$ or =N-, B^2 is $-C(R^7)=$ or –N=, and R^2, R^3, R^6, and R^7 are each hydrogen, halogen, aliphatic group, aromatic group, etc. The hydrophobic polymer includes polyethyl methacrylate, methyl methacrylate/methyl acrylate (65:35), and butyl methacrylate/methyl methacrylate/styrene

(50:30:20). Using the well known glass transition temperature of each monomer as found in Satake et al. (col.3, line 66-col.4, line19 and col.4, lines 47-53), it is calculated that the glass transition temperature of methyl methacrylate/methyl acrylate is approximately 64 ^{0}C while the glass transition temperature of butyl methacrylate/methyl methacrylate/styrene is approximately 57 ^{0}C. Further, as evidenced by Satake et al., the glass transition temperature of polyethyl methacrylate is 65 ^{0}C. Given that polyethyl methacrylate is identical to polymer utilized in the present invention, it is clear that this polymer would inherently possess equilibrium moisture content at 25 C under a relative humidity of 60% RH of 3% or less as presently claimed (col.1, lines 8-16, col.2, lines 30-55 and 62-67, col.4, line 6-col.5, line 5, col.21, lines 26-30, col.25, lines 5, 15, and 18-19, col.27, lines 5-10, col.39, lines 49-61, col.40, lines 39-49, Table 3 – ink sets 104 and 105 and Table 5 – ink set 110). Given that Yamanouchi et al. disclose color fine particle obtained from the same oil-soluble dye, hydrophobic polymer, and high boiling solvent as presently claimed and further, given that Yamanouchi et al. disclose that the color fine particles are obtained from 1-70% oil-soluble dye, 1-70% hydrophobic polymer, and 25-95% high boiling solvent which overlaps the amounts of each ingredient utilized in the present invention, it is clear that the color fine particles would inherently possess the same specific gravity as presently claimed.

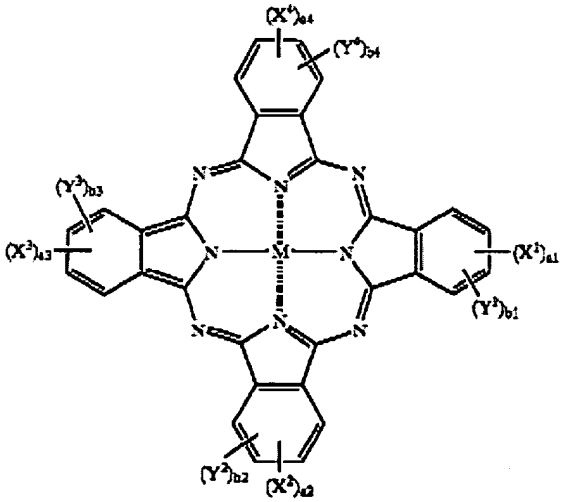
In light of the above, it is clear that Yamanouchi et al. anticipate the present claims.

13. Claims 1-3 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishizuka et al. (U.S. 2005/0261395) taken in view of the evidence given in Muramoto et al. (U.S. 5,198,500).

Ishizuka et al. disclose inkjet ink comprising color fine particles comprising oil –soluble dye, hydrophobic polymer, and high boiling point organic solvent having solubility in water of 3% or less. The color fine particles possesses average particle size of 1-80 nm. The oil-soluble dye includes:



where A is residue of 5-membered heterocyclic diazo component A-NH_2, B^1 and B^2 each represent is -CR^1= or -CR^2=, R^5 and R^6 are each hydrogen, aliphatic group, aromatic group, etc., and G, R^1, and R^2 are each hydrogen, halogen, aliphatic group, aromatic group, cyano group, etc.,



where X^1-X^4 are each –SO-Z, SO_2Z, $SO_2NR^1R^2$, CO NR^1R^2, or CO_2R^1, Z is alkyl group, cycloalkyl group, alkenyl group, etc., and R^1 and R^2 are each hydrogen, alkyl group, cycloalkyl group, etc., and A-N=N-B wherein A and B are each optionally substituted heterocyclic group. The hydrophobic polymer includes polyisopropyl methacrylate which is well known, as evidenced by Muramoto et al. (col.2, line 33), to possess glass transition temperature of 81 ^{0}C (paragraphs 1, 39-40, 89-92, 156-159, 231-235, 282, 347, 388-389, 392, 397, and 410-411). Given that Ishizuka et al. disclose color fine particle obtained from the same oil-soluble dye, hydrophobic polymer, and high boiling solvent as presently claimed and further, given that Ishizuka et al. disclose that the color fine particles are obtained from 0.1-20% oil-soluble dye, 1-70% hydrophobic polymer, and 25-95% high boiling solvent which overlaps the amounts of each ingredient utilized in the present invention, it is clear that the color fine particles would inherently possess the same specific gravity as presently claimed.

In light of the above, it is clear that Ishizuka et al. anticipate the present claims.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

15. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

16. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanouchi et al. (U.S. 6,713,528) in view of Satake et al. (U.S. 5,814,985) and Shaw-Klein et al. (U.S. 6,147,139).

Yamanouchi et al. disclose ink jet recording method comprising discharging ink onto substrate containing porous ink receiving layer ink jet ink wherein the ink comprises color fine particle dispersion containing oil-soluble dye, hydrophobic high boiling point solvent having solubility in water of 3% or less, and nonionic oil-soluble polymer, i.e. hydrophobic polymer. The hydrophobic polymer includes polyethyl methacrylate, methyl methacrylate/methyl acrylate

(65:35), and butyl methacrylate/methyl methacrylate/styrene (50:30:20). Using the well known glass transition temperature of each monomer as found in Satake et al. (col.3, line 66-col.4, line19 and col.4, lines 47-53), it is calculated that the glass transition temperature of methyl methacrylate/methyl acrylate is approximately 64 C while the glass transition temperature of butyl methacrylate/methyl methacrylate/styrene is approximately 57 C. Further, as evidenced by Satake et al., the glass transition temperature of polyethyl methacrylate is 65 C (col.1, lines 8-16, col.2, lines 30-55 and 62-67, col.4, line 6-col.5, line 5, col.21, lines 26-30, col.25, lines 5, 15, and 18-19, col.27, lines 5-10, col.39, lines 49-61, col.40, lines 39-49, col.45, lines 50-54, col.48, lines 50-54 and 65, Table 3 – ink sets 104 and 105 and Table 5 – ink set 110).

The difference between Yamanouchi et al. and the present claimed invention is the requirement in the claims that the color fine particles in the ink are fused onto the substrate.

Shaw-Klein et al., which is drawn to ink jet ink, disclose fusing ink to substrate in order to provide printed area with superior gloss, rub resistance, water resistance, and resistance to offset and blocking (col.2, lines 57-59).

In light of the motivation for fusing ink disclosed by Shaw-Klein et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to fuse the ink of Yamanouchi et al., and thus, the color fine particles, in order to produce ink with superior gloss, rub resistance, water resistance, and resistance to offset and blocking, and thereby arrive at the claimed invention.

17. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanouchi et al. in view of Satake et al. and Shaw-Klein et al. as applied to claim 6 above, and further in view of EP 858906.

The difference between Yamanouchi et al. in view of Satake et al. and Shaw-Klein et al. and the present claimed invention is the requirement in the claims that the porous ink receiving layer contains thermoplastic hydrophobic polymer.

EP 858916, which is drawn to ink jet recording medium, disclose that the recording medium comprises porous surface layer containing thermoplastic hydrophobic resin particles having average particle size of 0.1-5 μm wherein it is disclosed that if the average particle size is smaller than 0.1 μm, there is deteriorated ink absorbency resulting in the formation of poor quality image while if the average particle size exceed 5 μm, glossiness is lowered. The thermoplastic hydrophobic resin is obtained from styrene, acrylate, etc. which is the same monomer utilize to form the hydrophobic polymer of the color fine particles of Yamanouchi et al. The motivation for using the hydrophobic polymer in the porous layer is to produce recording medium that quickly absorbs inks, permits formation of dots, and provides prints having high optical density (page 2, lines 52-55 and 57-58 and page 3, lines 16-17, 24-33, and 38-40).

Given that the average particle size of the color fine particles disclosed by Yamanouchi et al. is 100 nm or less, preferably, 1-80 nm, and the average particle size of the thermoplastic hydrophobic polymer of EP 858916 is 100-5000 nm, it is seen that the average particle size of the hydrophobic resin is larger than the average particle size of the colored particles. Further, it is

calculated that the ratio of the average particle size of the hydrophobic polymer to the average particle size of the color fine particles is 1-50.

In light of the motivation for using thermoplastic hydrophobic resin disclosed by EP 858916 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such thermoplastic hydrophobic resin in the porous ink receiving layer of Yamanouchi et al. in order that the image receiving material possesses good ink absorbency and produces prints with good glossiness and high optical density, and thereby arrive at the claimed invention.

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Mizukawa et al. (U.S. 6,756,424) disclose ink comprising coloring particles comprising oil-soluble dye and hydrophobic polymer dispersed in aqueous medium.

Yamanouchi et al. '673 (U.S. 6,800,673) disclose ink jet ink comprising colored fine particle dispersion comprising high-boiling point solvent, oil-soluble dye, and water-insoluble ionic group-containing polymer.

Yamanouchi et al. '301 (U.S. 2002/0107301) disclose ink comprising polymer latex and coloring particulate dispersion comprising hydrophobic solvent and oil-soluble dye.

Kimura et al. (U.S. 6,521,031) ink comprising coloring composition comprising oil-soluble dye, oil-soluble polymer, and high boiling point solvent.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
2/11/06